

Midterm Exam

CMSY-199, Spring 2014

Section 1. Circle the letter of the best answer for each question:

1. Which primitive Java type was used to represent the body mass index (BMI) for Homework 1?
 - (a) `double`
 - (b) `float`
 - (c) `int`
 - (d) `short`
2. What type of Java comment begins with `/*` ?
 - (a) end-of-line comment
 - (b) javadoc comment
 - (c) traditional comment
 - (d) None of the above
3. Which of the following is a Java keyword?
 - (a) `ArrayList`
 - (b) `class`
 - (c) `printf`
 - (d) `String`
4. A valid Java identifier may not begin with which type of character?
 - (a) letter
 - (b) digit
 - (c) dollar sign
 - (d) underscore
5. Which is the proper declaration of the `main` method in a Java application which will be invoked directly by the JVM?
 - (a) `public static void main(String[] args)`
 - (b) `public static void main(String args[])`
 - (c) `public static void main(String... args)`
 - (d) All of the above

6. The standard input object in Java is represented by
 - (a) `System.in`
 - (b) `System.err`
 - (c) `System.out`
 - (d) None of the above
7. Given a five-digit `int` variable called `number`, which expression evaluates to the third (middle) digit?
 - (a) `number / 10 % 100`
 - (b) `number % 10 / 100`
 - (c) `number / 100 % 10`
 - (d) `number % 100 / 10`
8. For Homework 2, how many instance variables did the `Date` class have?
 - (a) one
 - (b) two
 - (c) three
 - (d) four
9. The `Scanner` class is in which package?
 - (a) `java.io`
 - (b) `java.lang`
 - (c) `java.system`
 - (d) `java.util`
10. How many primitive types are there in Java?
 - (a) 6
 - (b) 7
 - (c) 8
 - (d) 9
11. What is the default initialization value for reference type variables?
 - (a) 0
 - (b) `null`
 - (c) `nil`
 - (d) `NULL`

12. How many arguments does the default constructor created by the Java compiler have?
- (a) 0
 - (b) 1
 - (c) 2
 - (d) 3
13. Given the following partial class definition, what is the proper declaration for an instance variable that represents the name of the course?

```
public class GradeBook
{
    /* insert declaration here */
}
```

- (a) `public static String courseName;`
 - (b) `public static final String COURSE_NAME;`
 - (c) `private String courseName;`
 - (d) `private static String courseName;`
14. What is the output when the following Java application is compiled and run?

```
public class IfElse
{
    public static void main(String[] args)
    {
        int x = 4;
        int y = 6;
        if (x > 5)
        {
            if (y > 5) System.out.println("x and y are > 5");
        }
        else
            System.out.println("x is <= 5");
    }
}
```

- (a) `x and y are > 5`
- (b) `x is <= 5`
- (c) No output is produced
- (d) Compilation fails

15. Which type of error does the following Java application contain?

```
public class Hello
{
    public static void main(String[] args);
    {
        System.out.println("Hello World!")
    }
}
```

- (a) syntax error
- (b) logic error
- (c) fatal logic error
- (d) nonfatal logic error

16. What is the output when the following Java application is compiled and run?

```
public class WhileTest
{
    public static void main(String[] args)
    {
        int product = 3;
        while (product <= 100)
        {
            product = product * 3;
            System.out.print(product + " ");
        }
    }
}
```

- (a) 9 27 81 243
- (b) 9 27 81
- (c) 243
- (d) No output is produced

17. What is the most logical Java control structure to use when implementing counter-controlled repetition?

- (a) for
- (b) do...while
- (c) while
- (d) switch

18. Which of the following operators has the lowest precedence in Java?
- (a) `&&`
 - (b) `++`
 - (c) `*`
 - (d) `=`
19. Which primitive Java type has a size of 64 bits?
- (a) `char`
 - (b) `short`
 - (c) `float`
 - (d) `double`
20. Which component is required in a traditional Java `for` statement header?
- (a) control variable
 - (b) loop-continuation condition
 - (c) increment of control variable
 - (d) semicolon
21. Which of the following is a valid loop-continuation condition for a Java `while` statement?
- (a) `while()`
 - (b) `while(0)`
 - (c) `while(null)`
 - (d) `while(true)`
22. Which of the following was added in Java SE 7 as a valid type for a `switch` statement's controlling expression?
- (a) `char`
 - (b) `int`
 - (c) `long`
 - (d) `String`

23. What is the output when the following Java application is compiled and run?

```
public class DoWhileTest
{
    public static void main(String[] args)
    {
        int counter = 1;

        do
        {
            System.out.printf("%d ", ++counter);
        } while(counter <= 10);

        System.out.println();
    }
}
```

- (a) 1 2 3 4 5 6 7 8 9 10
 - (b) 2 3 4 5 6 7 8 9 10 11
 - (c) Compilation fails
 - (d) An exception is thrown at runtime
24. What line of code should be inserted into the Java application below to produce the output 1 2 3 4 6 7 8 9 10 ?

```
public class ForTest
{
    public static void main(String[] args)
    {
        for (int counter=1; counter <= 10; counter++)
        {
            /* insert code here */
            System.out.printf("%d ", counter);
        }
    }
}
```

- (a) if (counter == 5) break;
 - (b) if (counter == 5) continue;
 - (c) if (counter == 5) cycle;
 - (d) if (counter == 5) exit;
25. Which of the following logical expressions evaluates to false?
- (a) true && true
 - (b) true || false
 - (c) true ^ true
 - (d) !false

26. Given the following Java statement, which value for the variable `number` will return `true`?

```
if (number / 100 == number % 10) return true;
```

- (a) 121
- (b) 112
- (c) 211
- (d) 123

27. What line of code could be inserted into the Java application below to produce the output 3 4 5?

```
public class Triple
{
    public static void main(String[] args)
    {
        int side1 = 3;
        int side2 = 4;
        int hypot = 5;

        /* insert code here */
        System.out.printf("%d %d %d", side1, side2, hypot);
    }
}
```

- (a) `if (side1 * side1 + side2 * side2 == hypot * hypot)`
- (b) `if (Math.pow(side1,2) + Math.pow(side2,2) == Math.pow(hypot,2))`
- (c) `if (Math.hypot(side1,side2) == hypot)`
- (d) Any of the above

28. For Homework 3, what data structure was used as an instance variable to implement the `DeckOfCards` class?

- (a) `ArrayList<Card>`
- (b) `Arrays<Card>`
- (c) `Card[]`
- (d) None of the above

29. Which of the following Java expressions is suitable for determining the minimum of three numbers - `a`, `b`, and `c` - using the static `min` method from the `java.lang.Math` class?

- (a) `Math.min(a,b,c)`
- (b) `Math.min(a,Math.min(b,c))`
- (c) `Math.min(double a, double b, double c)`
- (d) `Math.min(double... a)`

30. The `Random` class from the Java SE 7 API is in the same package as which of the following classe(s)?
- (a) `ArrayList<E>`
 - (b) `Arrays`
 - (c) `Scanner`
 - (d) All of the above
31. Given a reference to an instance of the `Random` class called `randomNumbers` and an `int` variable named `face`, which Java statement can be used to simulate the outcome of rolling a six-sided die?
- (a) `face = randomNumber.nextInt(6);`
 - (b) `face = 1 + randomNumber.nextInt(5);`
 - (c) `face = 1 + randomNumber.nextInt(6);`
 - (d) None of the above
32. Which of the following statements is true about a Java enumeration?
- (a) An enumeration declares a set of constants represented by identifiers
 - (b) Java allows an `int` to be compared to an enumeration constant
 - (c) The identifiers in an enumeration need not be unique
 - (d) All of the above
33. What is the scope of a variable which is declared inside a Java method?
- (a) any class within the same package
 - (b) the entire body of the class
 - (c) all methods in the class
 - (d) the method in which it was declared
34. Which of the following is *not* part of a method's signature?
- (a) method name
 - (b) number of parameters
 - (c) order of the parameters
 - (d) return type
35. If an attempt is made to change an element of a Java array using an index value which is less than 0 or greater than `length-1`, what type of exception is thrown?
- (a) `ArrayIndexOutOfBoundsException`
 - (b) `BadIndexException`
 - (c) `ConcurrentModificationException`
 - (d) `NullPointerException`

36. What is passed to a method that has an array as its argument?
- (a) the array itself
 - (b) a copy of the array
 - (c) copies of all the array elements as a variable-length argument list
 - (d) a copy of the reference to the array
37. What is the output when the following Java application is compiled and run?

```
import java.util.*;

public class People
{
    public static void main(String[] args)
    {
        ArrayList<String> people = new ArrayList<String>();
        people.add("Thomas");
        people.add("Richard");
        people.add("Harold");
        people.add(0, "Michael");

        for (int name=0; name < people.size(); name++)
        {
            if (people.get(name).equals("Thomas"))
            {
                people.remove(0);
            }
        }
        System.out.println(people);
    }
}
```

- (a) [Thomas, Richard, Harold]
 - (b) [Michael, Thomas, Richard, Harold]
 - (c) Compilation fails
 - (d) An exception is thrown at runtime
38. Which method in the the `ArrayList` class returns the number of elements in the list?
- (a) `capacity`
 - (b) `length`
 - (c) `size`
 - (d) None of the above

39. Which class has `static` methods for searching and sorting arrays?
- (a) `Array`
 - (b) `Arrays`
 - (c) `ArrayIterator`
 - (d) `ArrayList`
40. An array of a primitive type, such as `int []`, is considered to be what type in Java?
- (a) `const` type
 - (b) `final` type
 - (c) primitive type
 - (d) reference type